



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,935	11/26/2003	Myoung-Soo Kim	8836-224 (IB12207-US)	9638
22150	7590	11/16/2005	EXAMINER	
F. CHAU & ASSOCIATES, LLC 130 WOODBURY ROAD WOODBURY, NY 11797			VU, HUNG K	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/722,935

Applicant(s)

KIM, MYOUNG-SOO

Examiner

Hung Vu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/18/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Request for Continued Examination

1 A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 08/25/05 has been entered. An action on the RCE follows.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 7 and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsu et al. (PN 6,259,126).

Hsu et al. discloses, as shown in Figures 2a, 3a, 4a, 5I, and 5II, a semiconductor device formed over a semiconductor substrate including a memory cell area and a peripheral circuit area, the semiconductor device comprising:

a MOS transistor (32,219) having a floating gate electrode, the MOS transistor being disposed at the memory cell area;

an OTP ROM capacitor having a lower electrode (54), an upper intermetal dielectric (58), and an upper electrode (60,218) with are stacked in the order name, the OTP ROM capacitor being disposed over the MOS transistor;

a floating gate plug (42) connecting the floating gate electrode with the lower electrode, wherein the floating gate electrode, the floating gate plug, and the lower electrode constitute a conductive structure which is electrically insulated from surrounding components. Note that Hsu et al. discloses the same structure as claimed, therefore, it is inherent that the structure is the OTP ROM.

Regarding claim 2, Hsu et al. discloses the device further comprising a capacitor that is disposed in the peripheral circuit area and includes a lower capacitor electrode, a dielectric film, and an upper capacitor electrode which are stacked in the order named.

Regarding claim 3, Hsu et al. discloses the lower electrode and the upper electrode are identical to the lower capacitor electrode and the upper capacitor electrode in material and thickness.

Regarding claim 4, Hsu et al. discloses the upper intermetal dielectric and the dielectric film are identical in material and thickness.

Regarding claim 7, Hsu et al. discloses the device further comprising a lower intermetal dielectric (44, 211) formed below the upper intermetal dielectric.

Art Unit: 2811

Regarding claim 10, Hsu et al. discloses the device further comprising a contact plug (212) which is connected to an impurity region of the semiconductor substrate and is made of the same material as the floating gate plug.

Regarding claim 11, Hsu et al. discloses the device further comprising a bitline (203), the contact plug connecting the bitline to the impurity region of the semiconductor substrate.

Regarding claims 12 and 13, Hsu et al. discloses the upper electrode comprises a first upper electrode (226) and a second upper electrode disposed over the first upper electrode.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (PN 6,259,126).

Hsu et al. discloses the claimed invention including the device as explained in the rejection above. Hsu et al. does not disclose the material of the upper intermetal dielectric layer.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device of Hsu et al. having the materials as that claimed by Applicant, since it has been held to be within the general skill of a worker in the art to select a known

Art Unit: 2811

material on the basis of its suitability for the intended use as a matter of obvious design choice.

In re Leshin, 125 USPQ 416.

4. Claims 6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (PN 6,259,126) in view of Tu et al. (PN 6,602,749, of record).

Regarding claim 6, Hsu et al. does not disclose the upper intermetal dielectric layer is disposed over an entire surface of the substrate. However, Tu et al. discloses a device comprising an upper intermetal dielectric layer (28) disposed over an entire surface of a substrate. Note Figure 1 of Tu et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device of Hsu et al. having the upper intermetal dielectric layer disposed over an entire surface of the substrate, such as taught by Tu et al. in order to further prevent the moisture from entering the active device.

Regarding claims 8 and 9, Hsu et al. does not disclose the lower intermetal dielectric forms an opening and the upper electrode is formed in the opening. However, Tu et al. discloses the device having a lower intermetal dielectric (24) formed below an upper intermetal dielectric (28), wherein the lower intermetal dielectric forms an opening and the upper electrode is formed in the opening. Note Figure 1 of Tu et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device of Seshadri et al. having a lower intermetal dielectric formed below the upper intermetal dielectric, wherein the lower intermetal dielectric forms an opening and the upper electrode is formed in the opening, such as taught by Tu et al. in order to further increase a surface coupling capacitor of the device.

Response to Arguments

5. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Tuesday to Friday 6:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272 - 1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vu

Nov 10, 2005



Hung Vu

Primary Examiner